

13. **Acanthocephala collected by the Swedish Expedition
to the Juan Fernandez Islands (1916—1917).¹**

By

H. J. VAN CLEAVE,

Urbana, Illinois.

With Plate 5.

Through the courtesy of Professor T. ODHNER, I have been granted the opportunity of studying the Acanthocephala taken by the Swedish Pacific Expedition (1916—17), directed by Dr. C. SKOTTSBERG, to the Juan Fernandez Islands off the coast of Chile. This collection, though relatively small, is of considerable importance because of the extremely meagre data available regarding the acanthocephalan fauna of the west coast of South America. Worms of this group occur as parasites in the intestine of all the groups of vertebrates but are frequently overlooked by general collectors. Most of the studies on Acanthocephala from South America have been conducted upon collections from Brazil. The few isolated instances of studies from other localities on the same continent indicate that collections from widely separated localities are fairly sure to contain distinctive species not encountered in other regions. Previous studies have demonstrated that many species of Acanthocephala are sharply limited in the extent of their geographical distribution. No lists are available that would make possible a comparison of the species collected by the Expedition and those that might be encountered on the nearest mainland.

In the collections secured by the Expedition but three species of Acanthocephala are represented. Two of these are from the intestine of fishes and the third from the intestine of a gull. The fish parasites include a new species of the genus *Rhadinorhynchus* and another new species for which it has been necessary to erect a new genus, *Tegorhynchus* for which *T. brevis* is designated as type.

A single specimen of the genus *Arhythmorhynchus* from *Larus dominicanus* belongs to a previously unrecognized species which is here described as *Arh. teres*.

¹ Contributions from the Zoological Laboratory of the University of Illinois, No. 173.

Genus **Rhadinorhynchus** Lühe 1911.

The genus *Rhadinorhynchus* was created by LÜHE (1911) to include the single species *Rhad. pristis* which occurs in fishes, chiefly of the Mediterranean. The addition of another species, *Rhad. horridus* from Egypt, and the recognition of the phylogenetic relationship existing between these two species and LINTON's *Echinogaster sagittifer*, caused LÜHE (1912) to suggest the possible justification for recognition of a sub-family Rhadinorhynchinae. This sub-family was definitely recognized by the present writer (VAN CLEAVE, 1918) in a paper which placed three additional species from North America within the same subfamily.

Rhadinorhynchus selkirki, *new species*.

(Figures 1 to 4.)

Described from five females and one male preserved in alcohol. Females 14 to 20 mm. long and from 0,6 to 0,8 mm. in maximum diameter. Single observed male 6 mm. long and 0,46 mm. in diameter. Proboscis long, cylindrical; 2 mm. or more in length and from 0,2 to 0,25 mm. in diameter; armed with 12 (in one instance 14) longitudinal rows of about 24 hooks each. Hooks on ventral surface (Fig. 4) much longer and heavier than corresponding hooks on dorsal surface (Fig. 3). Hooks in adjacent rows alternating except at the extreme base of proboscis where the basal hooks of all rows occur at approximately the same level thus forming a single circle of 12 hooks, each about 89 μ . long.

Comparison of hook lengths on ventral and dorsal surfaces of proboscis of *Rhad. selkirki*
(hooks are numbered from base toward tip of proboscis. Lengths are in μ).

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Ventral row	89	83	89	94	94	94	94	94	89	89	89	94	94	94	83	83
Dorsal row	89	53	53	53	60	60	60	65	65	65	65	71	71	71	65	65

In preserved specimens proboscis protrudes toward ventral side of anterior extremity at almost a right angle. Posterior region of body curved so that dorsal surface lies on concave rather than the more usual position on convex surface of body (Fig. 1).

Proboscis receptacle 2,5 to 3,8 mm. long, double walled, with the retractors of the proboscis receptacle emerging from the posterior margin.

Anterior region of body-proper provided with spines which are grouped into two fields. The spines at the anterior extremity of the body-proper form an irregular collar, the individual spines of which measure from 41 to 88 μ . Immediately posterior to this collar is a region entirely devoid of spines. This in turn is followed by an area bearing conspicuous spines (Fig. 2). In some individuals spines of this region attain a length of 115 μ though they more frequently measure from 45 to 95 μ .

About 1,5 mm. from the anterior extremity of the body-proper there is

a rather marked enlargement in the diameter of the body. In some specimens this was especially conspicuous as a hump upon the ventral surface. A crater-like depression observed on this prominence in two individuals superficially resembled a sucker but closer observation demonstrates that such a depression is probably due to a mutilation of the body surface caused by the accidental extraction of one or more of the cuticular spines.

None of the females collected by the Expedition contained fully formed embryos, consequently data for the comparison of these structures with those of closely related species are entirely wanting.

Infestation by this parasite does not seem to be excessive for in ten specimens of the host examined but six of the parasites were encountered.

Habitat: Intestine of *Caranx georgianus* C. V. taken at Masatierra by Mr. K. BÄCKSTRÖM in December 1916 and April 1917.

Cotypes deposited in the Riksmuseum i Stockholm and in the collection of the writer in Urbana, Illinois, U. S. A.

Until recently all Acanthocephala possessing body spines and occurring as adults in the intestine of fishes have been considered as belonging to the single genus *Rhadinorhynchus*. Such a purely external character has but little value in the determination of phylogenetic relationships. Recently the writer (VAN CLEAVE 1920) has erected a new genus, *Quadrigyrus*, for which it has been shown that internal structure and finer morphology rendered it impossible to include this genus even in the same family with *Rhadinorhynchus* despite the fact that both these genera are characterized by the presence of spines on the body wall.

There are frequent references in the literature on fish parasites to Acanthocephala bearing body spines but in most of these instances facts concerning the internal organization of the body are entirely wanting. Many such species were described in the epoch during which the genus *Echinorhynchus* was the only one recognized by most workers for the entire group of the Acanthocephala. As a result, many of the species descriptions of older workers such as DIESING and some of the relatively recent descriptions such as that of *Ech. orestiae* by NEVEU-LEMAIRE (1905) are completely lacking in details of morphology that are essential for any determination of their generic relationships. It is entirely possible that some of these insufficiently known species may properly belong in genera previously recognized or may necessitate the erection of new genera after their morphology is more completely understood. At present, on the basis of purely external characters it is safer to allow them to remain unplaced until actual determinations of relationships are possible.

Specimens from the intestine of *Malacopterus reticulatus* C. V. taken on Masatierra display unique characters with reference to the structure of the proboscis (Figs. 6 and 7) and the location of the brain. It has been found necessary to erect a new genus to accommodate these peculiar forms. Later study may show that some of the imperfectly known species bearing body spines may come within the scope of this same genus.

Tegorhynchus, new genus.

Acanthocephala parasitic as adults in the alimentary canal of fishes. Anterior portion of body-proper clothed with closely set cuticular spines which extend backward from the anterior extremity as an uninterrupted mantle. Proboscis covered by a thick hyaline membrane beyond which the proboscis hooks protrude but a short distance. Posterior extremity of body unarmed, in female terminating in two short, blunt papillae (Fig. 5) between which the genital aperture is located. Wall of proboscis receptacle composed of two muscular layers. Brain located inside the receptacle at its anterior extremity. Lemnisci long, extending about one half the length of the body cavity. Testes contiguous, followed immediately by a cluster of elongated cement glands.

Type species: *Tegorhynchus brevis*, new species.

Tegorhynchus brevis, new species.

(Figures 5 to 9.)

With the characters of the genus. Body short; females 4 to 8,5 mm. long by about 1,4 mm. in maximum diameter, males 3 to 6,5 mm. long by about 0,8 mm. in diameter. Proboscis when fully extended usually over 1 mm. in length and about 0,2 mm. in diameter; armed with 14 longitudinal rows of 17 to 19 hooks each.

Hook lengths in μ for a single row of hooks from ventral surface of proboscis of ♂ *Tegorhynchus brevis*.

Position in row	basal	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Length	53	47	41	35	30	30	30	30	35	41	47	53	60	65	70	70	70	65

Body spines 30 to 35 μ long (Figs. 8 and 9). Embryos within body cavity of gravid female usually about 60 by 18 μ .

Habitat: Numerous individuals were taken from the intestine of *Malacopterus reticulatus* C. V. in Masatierra by Mr. K. BÄCKSTRÖM, Dec. 16, 1916.

Cotypes are deposited in the Riksmuseum in Stockholm and in the collection of the writer in Urbana, Illinois.

Appendix.

Species from adjacent mainland.

Genus Arhythmorhynchus Lühe 1911.

A single specimen representing an undescribed species of the genus *Arhythmorhynchus* was obtained from the intestine of *Larus dominicanus* at Talcahuano, Chile. This individual is so unquestionably distinct from any previously described representative of the genus that a diagnosis is given here even though a knowledge of the male and data concerning some features of the female, such as the nature of the embryos, are wanting.

Arhythmorhynchus teres, *new species*.

Body of preserved specimen about 43 mm. long with a diameter of 0,75 mm. near anterior extremity. Remainder of body varying somewhat in diameter in different regions but about 0,3 mm. broad. Posterior region swollen to a diameter of about 0,68 mm. and bluntly truncated at termination. Proboscis 0,77 mm. long, slightly dilated (0,325 mm. across) at the middle and of smaller diameter (0,23 mm.) at tip and base. Proboscis hooks in 18 longitudinal rows of about 14 to 16 hooks each. Hooks not differing much in length but in different parts of proboscis varying widely in contour and in thickness, usually about 60 μ long; those near base very slightly curved and delicate, while those near the middle of proboscis in some instances have a diameter of 18 μ at the point of emergence from proboscis wall.

Habitat: intestine of *Larus dominicanus* at Talcahuano, Chile. Collected November 22, 1916 by Mr. K. BÄCKSTRÖM.

Type deposited in the Riksmuseum in Stockholm.

Literature Cited.

- LÜHE, M., 1911. Acanthocephalen. Die Süßwasserfauna Deutschlands, Heft 16. Jena.
—, 1912. Zur Kenntnis der Acanthocephalen. Zool. Jahrb., Jena, Suppl. 15, Bd. 1: 271—306.
NEVEU-LEMAIRE, M., 1905. Sur les Parasites des Poissons du Genre Orestias. Bull. Soc. Philomathique de Paris, Tome 7: 255—259.
VAN CLEAVE, H. J., 1918. Acanthocephala of the subfamily Rhadinorhynchinae from American fish. Jour. Parasitol., 5: 17—24.
—, 1920. Two new genera and species of Acanthocephalous worms from Venezuelan fishes. Proc. U. S. Natl. Museum, 58: 455—466.

Explanation of Plate 5.

Outlines of all figures were drawn from stained mounts in damar with the aid of a camera-lucida. Each of the lines indicating relative magnification has the value of 0,05 mm., except those accompanying figures 1 and 5 and these have the value of 0,5 mm.

Rhadinorhynchus selkirki sp. n.

- Fig. 1. Young female showing general body form and arrangement of the body spines.
- Fig. 2. Side view of a single body spine from posterior region of spined area.
- Fig. 3. Profile of a portion of a single longitudinal row of hooks from near the mid region of dorsal surface of proboscis.
- Fig. 4. Profile of hooks from ventral surface of proboscis, individual hooks directly corresponding in location to those shown in fig. 4.

Tegorhynchus brevis gen. et sp. n.

- Fig. 5. Surface view of posterior extremity of gravid female.
 - Fig. 6. Profile of hooks from ventral surface of base of proboscis showing the characteristic hyaline membrane in which the hooks are embedded.
 - Fig. 7. Profile of hooks from near middle of dorsal surface of proboscis.
 - Fig. 8. Side view of two spines from near anterior extremity of body proper.
 - Fig. 9. Surface view of a single body spine showing cuticular elevation produced by the spine.
-

